

MAEC TOOL NEWS: MAECT-M3T-NC308WA\_3-030316D

## A Note on Using C Compilers M3T-NC308WA, M3T-NC30WA, M3T-NC79WA and M3T-NC77WA

Please take note of the following problem in using C compilers (with an assembler and integrated development environment) M3T-NC308WA, M3T-NC30WA, M3T-NC79WA, and M3T-NC77WA:

- On the standard library function "sprintf"
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### 1. Products and Versions Concerned

For the M32C/80 and M16C/80 series MCUs

M3T-NC308WA V.1.00 Release 1 through V.5.00 Release 1

For the M16C/60, M16C/30, M16C/20, and M16C/10 series MCUs

M3T-NC30WA V.1.00 Release 1 through V.5.00 Release 2

For the 79xx series MCUs

M3T-NC79WA V.2.00 Release 1 through V.4.10 Release 1A

For the 77xx series MCUs

M3T-NC77WA V.3.00 Release 1 through V.5.20 Release 4

### 2. Description

If a space is inserted between two arguments, % and f, of the "sprintf" standard library function, the result of an assignment may become such a value as 0.000000. (The number of decimal places varies according to the specified format of the sprintf function.)

### 3. Condition

This problem occurs if a floating-point number explained below is assigned to argument "f". This floating-point number is such a value as 0.9999999, which can be rounded off to 1 as the nearest whole number.

### 4. Example

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```

#include <stdio.h>

float f;

int main( void )
{
    char buf[10];

    f = 0.9999999;

    sprintf( buf,"% f",f ); /*A space inserted between % and f*/
}

```

---

In the above example, the value assigned to "buf" becomes 0.000000.

## 5. Workaround

This problem can be circumvented in either of the following ways:

- (1) Modify the source file "print.c" of the standard library function as follows and re-create the standard library file by using the librarian:

Modification of "print.c":

To the processing in the \_f8prn function, add the four lines with the comment of "Processing to add" as shown in an example below.

Notes: \* This modification part begins at the 986th line in the M3T-NC308WA V.5.00 Release 1, and this beginning line varies according to compilers and their versions.

\* The English version does not have any comments in the comment columns.

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```

if ( CHK_KETA ) {
    if ( ( p_flg == 'e' || p_flg == 'E' ) && inte[0]=='9' ) {
        /* %e          9      */
        inte[0] = '1';      /*          */
        if ( CHK_EFUGO ) {
            /*          */
            cnt--;
            if ( !cnt )
                /*          */
                CLR_EFUGO;
        } else
            cnt++;
    } else {

```

```

    for ( r=0; r<seisu; r++ ) {
        if ( inte[r] == '9' )
            inte[r] = '0';
        else {
            ++inte[r];
            break;
        }
    }
    if ( r==seisu && r!=0) {
        inte[seisu] = '1';
        seisu++;
    }
    else if( seisu == 0){ /* Processing to add */
        inte[seisu] = '1'; /* Processing to add */
        seisu++; /* Processing to add */
    } /* Processing to add */
}
}

```

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Re-create the standard library file by going through the following steps:

- a. Modify the print.c file saved in the SRCxx¥lib directory under the directory where your product is installed. Here xx denotes the numerals in each product type.
- b. Re-create the standard library file using the makefile.dos file saved in the SRCxx¥lib directory.
- c. Copy the re-created standard library file to the directory indicated by environment variable LIBxx.

(2) Pass the absolute value of a floating-point number to the sprintf function as its argument.

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```

#include <stdio.h>
#include <math.h> /* math.h included */

float f;

int main( void )
{
    char buf[10];

    f = 0.99999999;

```

```
/* The absolute value of a real number assigned
    after the first line of the buffer */
/* No space inserted after % */

buf[0] = ' ';          /* A space assigned to buf[0] */
sprintf( &buf[1],"%f",f ); /* The value of f assigned
                            following buf[1] */
}
```

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## 6. Schedule of Fixing the Problem

We plan to fix this problem in our next release of the products.

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